

C E Composites-04.US

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Schedule A

to the Response the Office Action of August 4, 2005 Serial number 10/672,060

1. (Cancelled)
2. (Cancelled)
3. (Cancelled)
4. (Cancelled)
5. (Cancelled)
6. (Cancelled)
7. (Cancelled)
8. (Cancelled)
9. (Cancelled)
10. (Cancelled)
11. (Cancelled)
12. (Cancelled)
13. (Cancelled)
14. (Previously presented) A tubular baseball bat with a longitudinal axis comprising a cylindrical handle portion for gripping, a cylindrical tubular barrel portion of given length for striking, the barrel portion having a barrel wall with a sweet spot area within its length, and a tapered bridging portion connecting the handle portion and the barrel portion, wherein the barrel portion has:
 - a) a distal end remote from the handle;
 - b) a proximal end where the tapered portion connects to the handle portion;
 - c) a mid-section within the barrel portion, the mid-section being of shorter length than the length of the barrel portion and including the sweet spot area;

d) two lateral regions extending on either sides of the mid-section towards the distal and proximal ends respectively, and

e) a radial stiffness for the barrel wall at each location along the length of the barrel portion,

the radial stiffness of the barrel wall being greater in the mid-section of the barrel portion than in the two lateral regions of the barrel portion.

15. (Previously presented) A bat as in claim 14 wherein the barrel portion comprises a barrel wall of polymer composite material and the polymer composite material provides a radial stiffness in the barrel wall within the mid-section of the barrel portion which is greater than the radial stiffness of the barrel wall within the lateral regions.

16. (Currently amended) A bat as in claim 15 wherein the polymer composite material contains reinforcing fibers and the reinforcing fibers are angled within the barrel wall of the mid-section to provide the barrel wall with a radial stiffness in the mid-section that is greater than the radial stiffness of the barrel wall within the two lateral regions of the barrel portion.

17. (Previously presented) A bat as in claim 15 wherein the polymer composite material contains reinforcing fibers at various angles with respect to the longitudinal axis, the reinforcing fibers present within the barrel wall of the mid-section being at a higher average angle from the longitudinal axis than the average angle of the fibers within the barrel wall of the two lateral regions of the barrel portion.

18. (Currently amended) A bat as in claim 15 wherein the polymer composite material contains reinforcing fibers of types having differing stiffnesses, and the reinforcing fibers within the barrel wall of the mid-section contain a higher percentage of fibers of higher stiffness than in the lateral regions to provide the barrel wall with a radial stiffness in the mid-section that is greater than the radial stiffness of the barrel wall within the two lateral regions of the barrel portion.

19. (Currently amended) A bat as in claim 15 wherein the barrel wall has a thickness and wherein the polymer composite material of the barrel wall is of a greater thickness within the barrel wall of the mid-section than in the lateral regions to provide the barrel wall with a radial stiffness in the mid-section that is greater than the radial stiffness of the barrel wall within the two lateral regions of the barrel portion.

20. (Previously presented) A bat as in claim 14 wherein the barrel wall has a thickness and the thickness of the barrel wall in the mid-section is greater than the thickness of the barrel wall in the lateral regions whereby the radial stiffness of the barrel wall in the mid-section of the barrel portion is greater than the radial stiffness of the barrel wall in the lateral regions.

21. (Previously presented) A bat as in claim 20 wherein the thickness of the mid-section of the barrel portion is greater than the thickness of the lateral regions at their thinnest parts by at least 5%.

22. (Previously presented) A bat as in claim 14 wherein the barrel portion has inner and outer surfaces, the barrel portion comprising a stiffener positioned along the mid-section of the barrel portion adjacent the inner or outer surface of the barrel portion, whereby the radial stiffness of the barrel wall with the stiffener present along the mid-section of the barrel portion is greater than the radial stiffness of the barrel wall in the lateral regions.

23. (Previously presented) A bat as in claim 22 wherein the stiffener has a stiffener wall having a thickness of between .005 inches 0.040 inches.

24. (Previously presented) A bat as in claim 22 wherein the stiffener has a length of 2 to 6 inches.

25.. (Previously presented) A bat as in claim 22 wherein the stiffener is unbonded along its length to the barrel portion.

26. (Previously presented) A bat as in claim 22 wherein the stiffener is bonded at least partially along its length to the barrel portion.

27. (Previously presented) A bat as in claim 22 wherein the stiffener is bonded fully along its length to the barrel portion.

28. (Previously presented) A bat as in any one of claims 22, 23, 24, 25, 26 or 27 wherein the stiffener is located on the inner surface of the barrel portion.

29. (Previously presented) A bat as in any one of claims 22, 23, 24, 25, 26 or 27 wherein the stiffener is located on the external surface of the barrel portion.

30. (Previously presented) A bat as in any one of claims 22, 23, 24, 25, 26 or 27 wherein the stiffener is composed of polymer composite material which comprises a resin matrix encapsulating reinforcement fibers wherein the resin is selected from the group of resin consisting of epoxy, vinyl ester, polyester, urethane, nylon, and mixtures thereof and wherein the reinforcement fibers are selected from the group consisting of fiberglass, graphite, carbon, aramid, boron, nylon fibers and mixtures thereof.

31. (Currently amended) A bat as in any one of claims 14, 15, 16, 17, 18, 19, 20, or 21, 22, 23, 24, 25, 26, or 27, whereby the batting performance of the bat within the mid-section is reduced from the level of performance that would exist if the stiffness of the mid-section were no greater than the stiffness within the lateral regions.

32. (Currently amended) A bat as in any one of claims 14, 15, 16, 17, 18, 19, 20, or 21, 22, 23, 24, 25, 26, or 27 wherein the radial stiffness of the barrel portion is graduated as proceeding from a location within the mid-section of the barrel portion through to a location within the lateral regions of the barrel portion wherein the barrel wall has lesser radial stiffness than in the mid-section.

33. (Currently amended) A bat as in any one of claims 14, 15, 16, 17, 18, 19, 20, or 21, 22, 23, 24, 25, 26, or 27 wherein the mid-section has a length that is less than 50% of the length of the barrel portion.

34. (Previously presented) A bat as in 33 wherein the mid-section has a length that is less than 33.3% of the length of the barrel portion.

35. (Previously presented) A bat as in claim 33 wherein the mid-section has a length that is less than 25% of the length of the barrel portion.

36. (Currently amended) A bat as in any one of claims 14, 15, 16, 17, 18, 19, 20, 21, or 22, 23, 24, 25, 26, or 27 wherein the bat is composed of polymer composite material which comprises a resin matrix encapsulating reinforcement fibers wherein the resin is selected from the group of resin consisting of epoxy, vinyl ester, polyester, urethane, nylon, and mixtures thereof and wherein the reinforcement fibers are selected from the group consisting fiberglass, graphiite, carbon, aramid, boron, nylon fibers and mixtures thereof.

37. (Previously presented) A tubular baseball bat with a longitudinal axis comprising a cylindrical handle portion for gripping, a cylindrical tubular barrel portion of given length for striking, the barrel portion having a barrel wall with distinct locations and a sweet spot area within its length, and a tapered portion connecting the handle portion and the barrel portion, wherein the barrel portion has:

- a) a distal end remote from the handle;
- b) a proximal end where the tapered portion connects to the handle portion;
- c) a mid-section within the barrel portion, the mid-section being of shorter length than the length of the barrel portion and including the sweet spot area; and
- d) two lateral regions extending on either sides of the mid-section towards the distal and proximal ends respectively,

wherein the barrel wall of the barrel portion comprises polymer composite material containing reinforcing fibers at various angles with respect to the longitudinal axis, the reinforcing fibers present within the barrel wall of the mid-section being at a higher average angle with respect to the longitudinal axis than the average angle of the fibers within the barrel wall of the two lateral

regions of the barrel portion.

38. (Previously presented) A tubular baseball bat with a longitudinal axis comprising a cylindrical handle portion for gripping, a cylindrical tubular barrel portion of given length for striking, the barrel portion having a barrel wall with distinct locations and a sweet spot area within its length, and a tapered portion connecting the handle portion and the barrel portion, wherein the barrel portion has:

- a) a distal end remote from the handle;
- b) a proximal end where the tapered portion connects to the handle portion;
- c) a mid-section within the barrel portion, the mid-section being of shorter length than the length of the barrel portion and including the sweet spot area; and
- d) two lateral regions extending on either sides of the mid-section towards the distal and proximal ends respectively,

wherein the polymer composite material contains reinforcing fibers of types having differing stiffnesses, and the reinforcing fibers within the barrel wall of the mid-section contain a higher percentage of fibers of higher stiffness than in the lateral regions to provide the barrel wall with a radial stiffness in the mid-section that is greater than the radial stiffness of the barrel wall within the two lateral regions of the barrel portion.

39. (Previously presented) A tubular baseball bat comprising a cylindrical handle portion for gripping, a cylindrical tubular barrel portion of given length for striking, the barrel portion having a barrel wall with distinct locations and a sweet spot area within its length, and a tapered portion connecting the handle portion and the barrel portion, wherein the barrel portion has:

- a) a distal end remote from the handle;
- b) a proximal end where the tapered portion connects to the handle portion;
- c) a mid-section within the barrel portion, the mid-section being of shorter length than the length of the barrel portion and including the sweet spot area; and
- d) two lateral regions extending on either sides of the mid-section towards the distal and proximal ends respectively,

wherein the barrel wall of the barrel portion comprises polymer composite material wherein the polymer composite material contains reinforcing fibers of types having differing stiffnesses, and the reinforcing fibers within the barrel wall of the mid-section contain a higher percentage of

fibers of higher stiffness than in the lateral regions to provide the barrel wall with a radial stiffness in the mid-section that is greater than the radial stiffness of the barrel wall within the two lateral regions of the barrel.

40. (Previously presented) A tubular baseball bat comprising a cylindrical handle portion for gripping, a cylindrical tubular barrel portion of given length for striking, the barrel portion having a barrel wall and a sweet spot area within its length, and a tapered portion connecting the handle portion and the barrel portion, wherein the barrel portion has:

- a) a distal end remote from the handle;
- b) a proximal end where the tapered portion connects to the handle portion;
- c) a mid-section within the barrel portion, the mid-section being of shorter length than the length of the barrel portion and including the sweet spot area; and
- d) two lateral regions extending on either sides of the mid-section towards the distal and proximal ends respectively,

wherein the barrel wall of the barrel portion has a thickness and the barrel wall has a thickness in the mid-section that is greater than the thickness of the barrel wall in the lateral regions.

41. (Previously presented) A bat as in claim 40 wherein the thickness of the mid-section of the barrel portion is greater than the thickness of the lateral regions at their thinnest parts by at least 5%.

42. (Previously presented) A bat as in any one of claims 37, 38, 39, 40, or 41 wherein the mid-section has a length that is less than 50% of the length of the barrel portion.

43. (Previously presented) A bat as in claim 42 wherein the mid-section has a length that is less than 33.3% of the length of the barrel portion.

44. (Previously presented) A bat as in claim 42 wherein the mid-section has a length that is less than 25% of the length of the barrel portion.

45. (Previously presented) A bat as in claim 42 wherein the mid-section has a length that is less than 16 2/3% of the length of the barrel portion.